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The relationship between outgroup size and anti-outgroup attitudes: A theoretical synthesis and empirical test of group threat- and intergroup contact theory

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ABSTRACT

Although anti-immigrant attitudes represent a widespread social problem in many European societies, research has only partially understood the role the demographic size of the immigrant population plays for the prevalence of such attitudes. In this study, we use group threat- and intergroup contact theory to derive competing hypotheses on the role the size of the immigrant population plays for explaining the anti-immigrant attitudes of Dutch citizens. To this end, we used structural equation modeling with robust standard errors on nationally representative individual-level survey data enriched with official municipality-level statistics. We found empirical evidence for both group threat- and intergroup contact theory. Objective measurements of immigrant group size corresponded with subjective perceptions of a larger immigrant group size. Conversely, subjective perceptions of a larger immigrant group size were associated with perceptions of threatened group interests, which in turn related to anti-immigrant attitudes. On the other hand, however, larger immigrant group size facilitates intergroup contact, which was negatively associated with perceived threat and subsequent anti-immigrant attitudes.

1. Introduction and background

Understanding the sources of anti-outgroup sentiments necessitates to account for contextual- and individual-level explanatory characteristics alike (Bobo and Fox, 2003; Pettigrew, 2006). One of the central issues is the relationship between outgroup size and anti-outgroup attitudes. Group threat theory has proven a viable theoretical framework to relate outgroup size as a contextual-level characteristic to individual-level anti-outgroup attitudes, proposing that a larger outgroup size increases anti-outgroup attitudes mediated by perceptions of threatened group interests (Blalock, 1967; Blumer, 1958, see also Bobo, 1999; Quillian, 1995, 1996). However, the empirical evidence that outgroup size increases anti-outgroup attitudes was judged inconclusive (Semyonov et al., 2004, p. 684; Wagner et al., 2006, p. 381f.). One group of studies lends support to the *positive* relation of outgroup size with different manifestations of outgroup derogation (e.g., Coenders, 2001; Fosset and Kiecolt, 1989; Pettigrew and Cramer, 1959; Quillian, 1995, 1996; Scheepers et al., 2002a; Semyonov et al., 2006)[1]; another group failed to find such evidence (e.g., Coenders et al., 2005a,b; Evans and Need, 2002; Semyonov et al., 2004; Strabac and Listhaug,

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[1] We like to point out that much of the literature finding positive relationships of greater outgroup size with anti-outgroup attitudes relates to the negative attitudes of white people towards black people in the U.S. (e.g., Black, 1976; Fosset and Kiecolt, 1989; Giles, 1977; Giles and Evans, 1985; Glaser, 1994; Matthews and Prothro, 1966; Taylor, 1998).

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2008); and yet another group of studies even documented a *negative* relation (Hood and Morris, 1997; Lubbers et al., 2006). Particularly the latter findings could be explained by intergroup contact theory (Allport, 1954; Pettigrew, 1998; Wagner et al., 2006). In brief, intergroup contact theory proposes that a larger outgroup size provides opportunities for positive intergroup contact, which in turn ameliorates anti-outgroup attitudes. However, to date only a handful of studies set out to synthesize and test group threat theory and intergroup contact theory simultaneously. Consequently, the actual evidence of outgroup size as contextual characteristic assumed to affect (positively or negatively) anti-outgroup attitudes remains inconclusive.

In the present study, we attempt to improve upon this state of research in three complementary ways. First, from both group threat theory and intergroup contact theory, we derive and specify contradictory hypotheses on the association of outgroup size with anti-outgroup attitudes, and subject these hypotheses to a simultaneous empirical test. This task has rarely been taken up before, but is likely to further understanding of the role of outgroup size and to explain anti-outgroup attitudes. Second, we set out to deliver a more comprehensive examination of the micro-social processes linking outgroup size to anti-outgroup attitudes. Third, we attempt to make methodological contributions by employing structural equation modeling suitable for modelling cluster-sampled survey data (Muthén and Satorra, 1995) used in the empirical part of this study.

We chose to conduct our study in the Netherlands. The Netherlands is a host country for a substantial immigrant population due to labor migration, migration flows from former colonies and recent influxes of asylum seekers. Against this background, the arrival and residence of immigrants as reflected by the size of the immigrant population in the Netherlands has been accompanied by ongoing public debate and substantial amounts of exclusionary reactions towards immigrants (e.g., Coenders et al., 2005a). Examining whether and how the prevalence of anti-immigrant attitudes is affected by the size of the immigrant population is therefore of great theoretical and practical interest.

2. Two contradictory theories on outgroup size and anti-outgroup attitudes

2.1. Group threat theory and outgroup size

Group threat theory has proven to be a key approach for social science research seeking to explain anti-outgroup attitudes. This theory may be summarized by the general proposition derived from the classic work by Blalock (1967) that actual intergroup competition over scarce resources drives subjectively perceived threats to the ingroup's interests, which, in turn, motivate ingroup members to express anti-outgroup attitudes. More specifically, the reasoning underlying this proposition proceeds in two steps. First, actual intergroup competition for scarce resources is assumed to increase perceptions of outgroups as posing a threat to the ingroup (Blalock, 1967). Issues at stake in such intergroup competition can refer to tangible (e.g., housing or labor market issues) as well as intangible goods (e.g., religious or language issues) (Allport, 1954; Blalock, 1967; Coser, 1956). Second, ingroup members are hypothesized to respond to such perceived group threat with exclusionary anti-outgroup attitudes. According to the theory, such anti-outgroup attitudes serve to protect or restore the ingroup's interests vis-à-vis such threats (Blumer, 1958, p. 5, see Blalock, 1967; Bobo, 1999; Quillian, 1995). It is important to note that perceived group threat and anti-outgroup attitudes represent two closely related, yet theoretically and empirically distinct concepts (Blalock, 1967; Mughan and Paxton, 2006; Quillian, 1995; Scheepers et al., 2002a; Schlueter et al., 2008; Semyonov et al., 2004). More precisely, the concept of perceived group threat is commonly defined as "anticipation of negative consequences" due to the presence of some outgroup (Stephan and Renfro, 2002, p. 197). As distinguished from the cognitive appraisal of perceived threat (Stephan and Renfro, ibid.), the theory considers anti-outgroup attitudes to express explicit preferences for denying "to individuals or groups of people equality of treatment which they may wish", to cite Allport's (1954, p. 51) classic and well-known definition of social discrimination. Thus, the theory conceptualizes perceived group threats as immediate predictors of more explicit, discriminatory anti-outgroup stances. To what extent such perceived threats induce such discriminatory attitudes towards the outgroup is, in fact, an empirical question (McLaren, 2003, p. 915). However, previous research clearly supports the assumption that perceived group threat increases anti-outgroup attitudes. This conclusion is backed up by results from experimental analyses (Esses et al., 2001; Riek et al., 2006; Stephan et al., 2005; Ullrich et al., 2006), cross-national comparative investigations (Coenders, 2001; Scheepers et al., 2002a; Semyonov et al., 2004) as well as multiwave panel analyses (Schlueter et al., 2008). In addition, previous work on group threat theory specified several antecedent conditions for perceiving an outgroup as threatening (e.g., Coenders, 2001; Stephan and Renfro, 2002). On the individual level, research has shown that those with fewer socioeconomic resources (as indicated by lower level of education, lower income or unemployment; e.g., Gijsberts et al., 2004) as well as those with stronger religious attachment (as indicated by attendance of religious meetings; e.g., Scheepers et al., 2002b) are relatively more prone to perceive an outgroup as threatening the ingroup's interests. It has also been theorised and examined that threats seen to be posed by the outgroup to one's personal self-interests (individual threats) might motivate ingroup members to choose hostile stances towards the outgroup (Pettigrew et al., 2007; Rosenstein, 2008; Stephan and Renfro, 2002). Yet according to the logic embodied in the theory, even when ingroup members perceive their personal self-interests not to be affected by intergroup competition, they still might perceive the interests of their group to be threatened and, consequently, show anti-outgroup attitudes (Blumer, 1958, p. 5; Bobo, 1983, 1999; Quillian, 1996). As Riek et al. (2006) emphasize: "[...] a white male may perceive affirmative action as threatening the overall interests of his ingroup even when he is not personally affected" (Riek et al., 2006, p. 337). To understand therefore which sources, other than individual self-interests, increase perceived group threat and unfavorable intergroup attitudes, contextual-level characteristics need to be taken into account. Given the

purpose of the present study, we confine ourselves to focusing on outgroup size, which is doubtlessly one of the most prominent contextual-level characteristics in the group threat approach. Outgroup size is proposed as a crucial indicator of actual intergroup competition (Blalock, 1967; Coenders, 2001; Quillian, 1995, 1996; Scheepers et al., 2002a) and is commonly defined as the percentage of outgroup members relative to the total population in a given geographic context. According to the general proposition it follows that, in contexts "where the size of a minority group is large or increasing" (Allport, 1954, p. 221), hostile intergroup attitudes are expected to rise (Blalock, 1967, p. 145; Hawley, 1944, p. 670). Surprisingly, up to this date only a small number of studies investigated whether the relation of outgroup size with anti-outgroup attitudes is indeed mediated by perceived group threat. For one, both Scheepers et al. (2002a) as well as Schlueter et al. (2008) find empirical evidence for this assumption. Yet a limitation of these studies is that further elaborations on the question how contextual characteristics translate into individual anti-immigrant attitudes remain unexplored. Especially relevant in this regard is a contribution by Semyonov et al. (2004). These authors hypothesized that the relationship of outgroup size with perceived group threat must be seen to be mediated itself by perceived outgroup size. This suggestion conforms to the general idea that people reflect objective environmental characteristics (for example, the size of an outgroup) by their subjective perceptions – a key theoretical notion of studies simultaneously investigating the link between contextual-level characteristics and individual-level outcomes. Relating district-level objective measures of the percentage of immigrants to subjective perceptions of the size of the immigrant population in Germany, Semyonov et al. (2004) find no empirical support for the expected association between objective- and perceived population size of immigrants. However, in a similar analysis of cross-national data from 21 European countries (Semyonov et al., 2008), the size of the immigrant population turned out to be positively related to respondents' individual perceptions of the size of the immigrant population as expected. Likewise, respondents reporting a larger perceived population of immigrants evaluated the impact of immigrants on host societies more negatively. In sum, evidence on the full mediating process linking objective outgroup size to discriminatory attitudes via individual perceptions of the size of the outgroup and perceived threat is only beginning to emerge. Given that it has long been argued that investigating the intermediary mechanisms operating between objective conditions and individual outcomes facilitates the understanding of multilevel relationships (van den Eeden and Hüttner, 1982), re-examining this issue clearly represents an important task.

2.2. Intergroup contact theory and outgroup size

Social scientists proposed intergroup contact theory to understand as to how intergroup tensions and unfavorable intergroup attitudes might be alleviated (Allport, 1954; Hawley, 1944). Defining intergroup contact as "face-to-face interaction between members of clearly defined groups" (Pettigrew and Tropp, 2006, p. 754), intergroup contact theory posits at its core that actual intergroup contact, and therefore also providing contact opportunities between members of different groups, may induce more favorable intergroup attitudes. Initial studies hypothesized intergroup contact to exert its ameliorative impact on tensious intergroup relations only under optimal conditions – such as common goals, intergroup cooperation, equal status and authority support (Allport, 1954, see Pettigrew, 1998). However, scholars nowadays commonly agree that, even in the absence of supportive conditions, intergroup contact typically improves intergroup attitudes (Pettigrew and Tropp, 2008; Stein et al., 2000). Of course, not all intergroup contacts will be uniformly experienced as positive, meaning that negative intergroup contacts might well deteriorate intergroup attitudes (Stephan and Stephan, 1985). Yet, recent meta-analytical evidence shows that even casual everyday contacts between members of different groups in neighborhood, school or workplace settings predominantly lead to more positive intergroup attitudes (Pettigrew and Tropp, 2006, see also Dixon and Rosenbaum, 2004). Importantly, it should be acknowledged that part of such contact effects might be due to self-selection. This means that ingroup members with highly unfavorable attitudes might tend to avoid intergroup contact, whereas those ingroup members with relatively positive attitudes remain in contact. However, research has shown that the causal relationship from contact to favorable intergroup attitudes is typically stronger than the reverse relation from unfavorable intergroup attitudes to contact (Pettigrew and Tropp, 2006; Powers and Ellison, 1995). To date, studies on intergroup contact typically focus on the individual level of analysis, and much of this research tradition sets out to uncover the social psychological mechanisms explaining why intergroup contact reduces unfavorable intergroup attitudes. While this research shows that intergroup contact commonly operates in multiple ways (Pettigrew, 1998; Pettigrew and Tropp, 2008), the present study concerns itself especially with the finding that frequent intergroup contacts have beneficial effects on unfavorable intergroup attitudes due to a reduction of perceived group threat (Pettigrew and Tropp, 2006; Stephan and Renfro, 2002; Voci and Hewstone, 2003). That is, ingroup members with intergroup contacts have consistently been found to report lower levels of perceived threats related to some outgroup and, subsequently, lower levels of anti-outgroup attitudes. Accordingly, intergroup contact appears to be an antecedent condition of perceived group threat, which in turn mediates the relationship of intergroup contact with unfavorable intergroup attitudes (Stephan and Renfro, 2002). Given this presumed causal sequence, recent extensions of intergroup contact theory consider outgroup size to increase opportunities for intergroup contact (Schlueter and Wagner, 2008; Wagner et al., 2003, 2006).[2] Following this approach, outgroup size – which may correspond with perceived outgroup size – increases intergroup contact, which reduces perceived threats, and ultimately reduces unfavorable intergroup attitudes. Note that the pivotal implications of this reasoning actually contradict group threat

[2] See Blau and Schwartz (1984) for similar reasoning from a macrostructural perspective.

theory: by conceptualizing outgroup size as a contextual-level factor that alleviates individual-level perceived group threats and hostile intergroup attitudes due to increasing intergroup contact, intergroup contact theory opposes the proposition of group threat theory that outgroup size increases threats and anti-outgroup attitudes. Empirical studies examining the status of outgroup size to explain anti-outgroup attitudes, following the version of intergroup contact theory discussed above, are, however, very scant. For example, Wagner et al. (2006) examined how individual intergroup contact and prejudice differed with respect to varying percentages of foreigners across districts in Germany. The authors concluded that "an increase in the percentage of ethnic minority members affords the majority opportunity for intergroup contact and thus reduces the majority's prejudice" (Wagner et al., 2006, p. 380; see also Wagner et al., 2003). Similarly, support for the outlined mediating structure between outgroup size, intergroup contact and its subsequent impact on unfavorable intergroup attitudes is also found in a study based on regionalized cross-national data from Europe (Schlueter and Wagner, 2008). Despite the initial evidence delivered by these studies, it must be acknowledged that it is difficult to define what constitutes the appropriate contextual levels of analysis (Nadeau et al., 1993, p. 337; Quillian, 1996, p. 829). For example, it has been argued that studying intergroup phenomena at such expansive geographical units as districts or regions may mask true variation in intergroup relations (Oliver and Mendelberg, 2000; Schmid et al., 2008). Indeed, to date it has not been established whether these initial findings also hold for smaller local contexts (e.g., municipalities) as more proximate everyday settings of intergroup relations. This gap in the literature prompts us to re-examine the presumed associations between outgroup size, intergroup contact and anti-immigrant attitudes.

3. Research hypotheses

The above discussion implies that researchers may opt to examine alternative hypotheses following from group threat theory and intergroup contact theory to improve current understanding of the role of outgroup size for anti-outgroup attitudes. In this study, we attempt to contribute to this task by examining two sets of hypotheses. On the basis of previous propositions with regard to group threat theory, we tested the following hypotheses for direct relations:

Hypothesis (1): The larger the objective outgroup size is, the larger the perceived outgroup size will be.
Hypothesis (2): The larger the objective outgroup size is, the more perceived group threat there will be.
Hypothesis (3): The larger the perceived outgroup size is, the more perceived group threat there will be.
Hypothesis (4): The more perceived group threat there is, the more anti-outgroup attitudes there will be.

Next, with regard to intergroup contact theory, we set out to test the following hypotheses:

Hypothesis (5a): The larger the objective outgroup size is, the more intergroup contact there will be.
Hypothesis (5b): The larger the perceived outgroup size is, the more intergroup contact there will be.
Hypothesis (6): The more intergroup contact there is, the less perceived group threat there will be.

To safeguard our results on these major hypotheses against potentially biasing influences of further individual-level variables varying across the municipalities under study (Snijders and Bosker, 1999), we followed previous work by investigating whether being female, being older, being poorly educated, being unemployed and being more religious are factors that are related to perceived group threat, unfavorable intergroup attitudes (e.g., Scheepers et al., 2002b), and perceived group size and intergroup contact.[3]

4. Data and measurements

4.1. Data

For our empirical analyses we used individual-level data from the Religion in Dutch Society Survey 2000, actually containing all relevant measurements to test our hypotheses, which is rather rare (Eisinga et al., 2002). This nationally representative survey was collected by means of face-to-face interviews, using a two-stage random probability sample of the non-institutionalized population living in the Netherlands. In the first stage, 92 municipalities were sampled. In the second stage, random samples of individuals aged between 18 and 70 years were drawn, based on municipal registers. The response rate from this sample was 43.7%, yielding data from a total of 1008 people. Given that we were only interested in explaining the attitudes of Dutch citizens towards immigrants, we excluded from the database all persons who did not have the Dutch nationality or who had at least one parent who was born outside the Netherlands. What remained was a total sample of 893 people. We then used an identifier-variable available in the data to match the individual-level survey data with official municipality-level statistics on the percentage of non-western immigrants present in the municipalities in the year the interviews were held.

[3] Quite unexpectedly, our review of the research literature yielded that prior studies largely neglected to examine individual-level sources of intergroup contact (see Quillian and Campbell, 2003 for a related observation). With regard to intergroup contact, we therefore proceeded in an exploratory fashion by regressing our measure of intergroup contact on the same set of control variables as for perceived group threat and unfavorable intergroup attitudes.

4.2. Measurements

4.2.1. Objective outgroup size

To operationalize outgroup size, we used official statistics on the percentage of non-western immigrants present per municipality as derived from the statline facilities of Statistics Netherlands (CBS, 2007). Non-western immigrants (officially defined as all persons with two or at least one parent from a Turkish, Moroccan, Surinamese or Antillean background) represent the largest share of all immigrants living in the Netherlands (SCP 2007), and previous studies have shown that the anti-immigrant attitudes of Dutch citizens are particularly pronounced with regard to non-western immigrants (Hagendoorn, 1995).[4] To reduce the skewness of this measure, we recoded this variable into six categories ranging from "0–1%", "2–5%", "6–10%", "11–15%", "16–20%" and "21% and more".[5]

4.2.2. Perceived outgroup size

To measure perceived outgroup size, we used a single indicator. Respondents were asked "How many percent of the people in your neighborhood are part of an ethnic minority group?" Answer options were given in categories of 10%, for example "between 0% and 10%".[6]

4.2.3. Intergroup contact

To assess intergroup contact, we used two items. Respondents were asked "How many percent of your friends belong to an ethnic minority group?" and "How many percent of your colleagues belong to an ethnic minority group?" Again, the response options ranged from 0% to 100% and were given in categories of 10%. Higher values represented higher perceived percentages of ethnic minority members in their immediate social environment.

4.2.4. Perceived group threat

To measure perceived group threat, we used two indicators. Respondents were asked to evaluate the following statements, using a five-point Likert-type scale (a) "Ethnic minorities are too much in charge" and (b) "Ethnic minorities coming to the Netherlands constitute a threat to our own culture". Consistent with our conceptualizations of perceived group threat as negative consequences perceived to follow from the presence of an outgroup, these indicators reflect the experienced threats to group interests in the domains of political power and culture.[7] Possible responses ranged from "agree entirely" (1) to "don't agree at all" (5). After recoding, higher values indicated higher perceived group threat. Inter-item correlation (Pearson's r) was .66.

4.2.5. Anti-immigrant attitudes

To assess anti-immigrant attitudes, we employed two measurement instruments. In line with our guiding definition, both of these instruments met the criterion of reflecting preferences for a disadvantageous or discriminatory treatment of the outgroup. Our first measurement comprised three items, for which we used three-point Likert-type scales to assess discriminatory intentions toward immigrants in the housing and labor markets. One of the sample items read "Suppose there were two employees. One is Dutch and the other from an ethnic minority group. The employees are equal in all other respects. If one of the two has to be fired because the company is not doing very well, which one should that be: the employee from the ethnic minority group or the Dutch employee?"[8] The answer options were (1) = "ethnic minority employee", (2) = "Dutch employee" and (3) = "either one on an objective basis". Answer category (3) was treated as a middle category. All items were recoded so that higher values reflected a preference for a favorable treatment of Dutch citizens compared to immigrants. Initial evidence that these indicators are part of a common dimension was found in the size of the item intercorrelations (Spearman's ρ), ranging from .36 to .38. One advantage of these indicators is their face-validity, given that labor market and housing issues with regard to immigrants were high on the Dutch political and public agendas during the past decade (Guiraudon et al., 2005). On the other hand, it has been acknowledged that, due to their rather harsh formulation, these measurements might be relatively prone to social desirability bias (Coenders and Scheepers, 1998). We therefore carried out a second measurement to assess anti-immigrant attitudes more generally. For this single indicator, respondents were asked to indicate on a four-point Likert-type scale to

[4] Notice that in colloquial language, at least in the Dutch context, the category 'non-western immigrants' is generally referred to as 'ethnic minorities'. For a detailed description of the development of the term 'ethnic minority' in the Netherlands, see Guiraudon et al. (2005).

[5] Testing our hypotheses, we also experimented with the original scores of the group-size variable and the logged values of the original scores. However, we found no substantive differences in the corresponding inferential results.

[6] From an alternative point of view (e.g., Stein et al., 2000), this measurement could also be labelled as the subjectively estimated potential for public intergroup contact at the neighbourhood level.

[7] Respondents were also asked to what extent they agree with the statement "The day will come that a Dutch person will be sooner fired than a member of an ethnic minority". We acknowledge that this indicator could be considered to be a straightforward measure of group threat in the economic domain. Yet we decided to refrain from utilizing this item due to its semantic closeness to some of our dependent constructs discussed below.

[8] The second item read as follows: "Suppose, again, that there were two employees. One is Dutch and the other from an ethnic minority group. The employees are equal in all other respects. If only one of the two can get promoted, which one should that be: the employee from the ethnic minority group or the Dutch employee?"; answer categories were identical to the first item. The third item read: "Suppose there were two families. One family belongs to an ethnic minority group and the other is a Dutch family. The families are equal in all other respects. Which family should get the first vacant accommodation in times of housing shortage"; the answer categories were (1) = "ethnic minority family", (2) = Dutch family, (3) = "either one on an objective basis".

what extent they were in favor of or against the presence of ethnic minorities in the Netherlands. The response options comprised four categories ranging from "strongly in favor of" (1) to "strongly against" (4).

4.2.6. Background variables

We included the following background variables in our structural models[9]: *Gender* was measured with males as a reference category (1 = female). *Age* was measured in years. *Educational level* was assessed by an indicator measuring the highest level of education the respondents achieved after elementary school. The response options ranged from 0 = "none" to 7 = "University". *Unemployment* was measured using a dichotomous measure indicating whether the respondent was unemployed at the time of the interview or not (1 = unemployed). To assess *religiosity*, we used a single-indicator measuring how often the respondents attended religious services. The answer options ranged from "about once a week" (1) to "hardly ever/never" (4). After recoding, higher values reflected a higher level of religiosity.

5. Method

We tested our hypotheses by means of structural equation modeling (SEM) for complex sample designs (Muthén and Satorra, 1995). As mentioned above, this approach also yields adjusted standard errors and goodness-of-fit statistics as often required for hierarchically ordered data from complex sample designs.[10] To evaluate model fit, we used the χ^2-to-df-ratio (χ^2/df, Marsh and Hocevar, 1985), the CFI (comparative fit index, Bentler, 1990), the TLI (Tucker–Lewis-Index, Tucker and Lewis, 1973) and the RMSEA (root mean square error of approximation, Steiger and Lind, 1980). Models are generally considered to fit adequately to the data when χ^2/df-ratio < 3, CFI and TLI > .95, and RMSEA < .05. All models were estimated on the basis of raw data, using the 'Complex'-procedure as embodied in the Mplus 3.14 statistical software (Muthén and Muthén, 1998–2006) with robust maximum likelihood (MLR) estimates. Item non-response for the survey data was generally on a very low level, and we used the 'Missing'-procedure as provided by Mplus 3.14 to account for missingness.

6. Results

6.1. Measurement models

Prior to hypotheses testing, we established measurement models to examine whether the indicators available in the survey loaded on the latent constructs we had conceptually identified them with. We considered these preliminary analyses to be a necessary prerequisite for our structural models because in the past, some authors doubted the theoretical, conceptual and therefore empirical distinctiveness of perceived group threat and anti-outgroup attitudes (see Scheepers et al., 2002a for a brief discussion and Schlueter et al., 2008 for a longitudinal test). Assuming the indicators of perceived group threat and discriminatory intentions towards immigrants to load on a single latent variable, we checked whether a one-factor model would gain more support from the data than the correlated two-factor model we deduced from propositions of group threat theory. The results showed that the one-factor model did not correspond adequately with the data (one-factor model: $\chi^2 = 59.508$; df = 5; χ^2/df = 11.90; CFI = .893; TLI = .785; RMSEA = .111). Yet, the two-factor model, with perceived group threat and discriminatory intentions towards immigrants as correlated but distinct factors, showed a good fit (two-factor model: $\chi^2 = 3.32$; df = 4; χ^2/df = 0.83; CFI = 1; TLI = 1; RMSEA = .000) which was also significantly better as compared to the one-factor model ($\Delta\chi^2 = 56.188$; df = 1; $p < .001$). We then estimated a comprehensive measurement model, also including the two indicators measuring intergroup contact as a latent variable. As indicated by the fit measures ($\chi^2 = 12.212$; df = 11; χ^2/df = 1.11; CFI = .998; TLI = .997; RMSEA = .011), this model corresponded well with the data. These findings lend support to the conceptual and empirical distinction of the individual-level latent constructs. Next, we turned to the major findings from the structural models.[11]

6.2. Hypotheses testing

Fig. 1 summarizes our major findings by means of a reduced path diagram. To simplify matters, we refrained from showing insignificant structural paths, observed indicators of the latent variables and residuals. To begin with, we noted that the

[9] Some earlier studies investigating group threat theory included level of urbanisation as control variable. Experimenting with such a measure for our present data, we found that the level of urbanization and the percentage of non-western minorities correlated with $r = .81$. Given the strong overlap between these different measures and absent specific theoretical assumptions justifying the inclusion of level of urbanisation in our model, we opted for excluding this additional control variable from the subsequent analyses (Lieberson, 1985, p. 31).

[10] Initially, we set out to model the covariance structure in our data according to the within-group and between-group matrices following from the data structure as individuals (within-group matrices) are nested in municipalities (between-group matrices). Yet these models did not converge, potentially due to the generally quite demanding data requirements for multilevel covariance structure modeling. Hence, we opted for the less computationally intensive, but equally applicable 'Complex'-procedure (see Muthén and Satorra, 1995; Muthén and Muthén, 1998–2006).

[11] For all structural models, we allowed all control variables to correlate among each other and to affect all individual-level theoretical constructs, i.e., perceived outgroup size, perceived group threat, intergroup contact, discriminatory intentions towards immigrants and attitude towards immigration restriction.

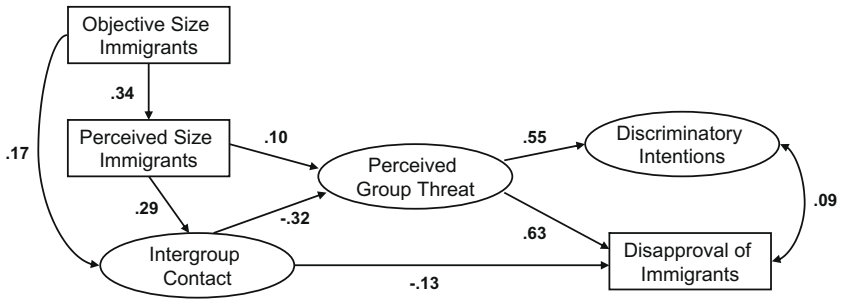

Fig. 1. Structural model testing the role of objective immigrant group size according to group threat theory and intergroup contact theory. *Note.* Non-significant paths, observed indicators for the latent variables and residuals are not shown. One-headed arrows indicate regression coefficients; the double-headed arrow indicates a correlation.

fit of the structural model is consistent with the underlying data ($\chi^2 = 72.983$; df = 43; $\chi^2/df = 1.69$; CFI = .983; TLI = .963; RMSEA = .028). Next, we considered the results on hypotheses 1–4 from the perspective of group threat theory.

We found that objective immigrant group size was significantly and positively associated with perceived immigrant group size ($\beta = .34$). This result supports hypothesis (1), stating that a larger outgroup size in people's environment corresponds with more subjective perceptions thereof. By contrast, the association of objective immigrant group size with perceived group threat does not reach statistical significance. These outcomes lead us to refute hypothesis (2). The relation between perceived outgroup size and perceived group threat turns out to be significant and also in the expected direction ($\beta = .10$). This result supports hypothesis (3), suggesting that perceptions of outgroup size give rise to perceptions of threatened group interests. Next, we ascertained significant and positive associations between perceived group threat with respondents' anti-immigrant discriminatory intentions ($\beta = .55$) as well as with disapproval of immigrants ($\beta = .63$). This evidence is in agreement with hypothesis (4), according to which perceptions of threatened group interests induce anti-outgroup attitudes. We also noted a significant and positive correlation between the two measures of anti-immigrant attitudes ($r = .09$). To further examine the outcomes of these tests, we then looked at the indirect relations of objective immigrant group size with anti-immigrant discriminatory intentions and disapproval of immigrants through both perceived outgroup size and perceived group threat.[12] Consistent with the results reported above, these indirect associations proved to be significantly positive ($p < .05$) for both anti-immigrant discriminatory intentions ($\beta = .02$) and disapproval of immigrants ($\beta = .022$) (not shown).

Next, we turned to the findings on hypotheses (5a)–(6) as derived from intergroup contact theory. The results showed that objective immigrant group size was significantly positive associated with intergroup contact ($\beta = .17$). This result is consistent with hypothesis (5a): outgroup size increases the opportunities for intergroup contact. Likewise, the significant and positive parameter estimate for the relation of perceived group size immigrants with intergroup contact ($\beta = .29$) lends evidence to hypothesis (5b). With regard to hypothesis (6), we expected a negative association between intergroup contact and perceptions of threatened group interests. As indicated by the corresponding negative parameter estimate for the relation of intergroup contact ($\beta = -.32$) with perceived group threat, this suggestion gained empirical support.[13] We further ascertained a significant and negative direct association between intergroup contact and disapproval of immigrants ($\beta = -.13$). Finally, we estimated the indirect relations between objective immigrant group size via intergroup contact with the two measures of anti-immigrant attitudes (not shown). In doing so, we accounted for the impact of objective immigrant group size on intergroup contact through perceived group size and for the relation of intergroup contact with the two measures of anti-immigrant attitudes through perceived group threat. In line with the previous findings, these indirect associations reached statistical significance ($p < .05$), with their signs in the expected direction for anti-immigrant discriminatory intentions ($\beta = -.019$) and disapproval of immigrants ($\beta = -.021$). Before discussing these results, we would like to briefly review the results on the background variables for this structural model as documented in rows 1–6 of Table 1.

We observed that *age* is negatively related to perceived group size immigrants ($\beta = -.19$) and intergroup contact ($\beta = -.15$). *Educational level* significantly decreases perceived group threat ($\beta = -.36$), while *religiosity* increases perceptions of group threat ($\beta = .09$), and thus turn out to affect anti-outgroup attitudes indirectly through perceived group threat. We further noted that being unemployed exerts a small but significantly positive relation with anti-immigrant discriminatory intentions ($\beta = .09$). All other relations of the background variables turned out to be non-significant.

[12] To do so, we utilized the 'Model indirect'-command available in Mplus 3.14.

[13] One could argue that intergroup contact in workplace settings is less effective in reducing perceptions of group threat and improving intergroup attitudes (Dixon and Rosenbaum, 2004; Johnson and Jacobson, 2005). Moreover, in a few studies, more remote forms of intergroup contact were found to increase anti-outgroup attitudes (Pettigrew and Tropp, 2007). To account for the potentiality of differential contact relationships in additional analyses, we therefore treated the two indicators of intergroup contact as separate variables. According to the results, intergroup contact reduces anti-outgroup attitudes by decreasing threat perceptions in friendship and workplace settings alike. Yet as expected, the relationship of intergroup friendship with perceived group threat ($\beta = -.15$, $p < .01$) turned out to be stronger than the corresponding relationship of intergroup contact in workplace settings ($\beta = -.10$, $p < .01$).

Table 1
Non-standardized regression coefficients (standard errors) and standardized regression coefficients.

Exogenous variables	Endogenous variables									
	Perceived group size		Perceived group threat		Intergroup contact		Discriminatory intentions		Disapproval of immigrants	
	b (SE)	*β*	*b* (SE)	*β*	*b* (SE)	*β*	*b* (SE)	*β*	*b* (SE)	*β*
Age	−.24 (.04)	−.19***	−.001 (.002)	−.01	−.083 (.024)	−.152***	−.002 (.001)	.006	.001 (.002)	.01
Gender	−.39 (.89)	−.012	−.07 (.07)	−.04	−1.47 (.789)	−.103	−.04 (.03)	−.061	−.02 (.039)	−.014
Education	−.06 (.34)	−.009	−.145 (.016)	−.36***	.302 (.135)	.092*	−.011 (.006)	−.075	−.01 (.01)	−.029
Unemp.	1.69 (2.11)	.019	.000 (.183)	.000	−1.827 (2.185)	−.046	.16 (.082)	.09+	.139 (.11)	.034
Relig.	−.05 (.53)	−.036	.075 (.036)	.092*	−0.413 (.218)	−.061	−.02 (.01)	−.067	−.04 (.022)	−.057
Objective size	4.21 (.45)	.34***	−.001 (.023)	−.001	.914 (.293)	.170**	.012 (.009)	.051	.002 (.014)	.004
Perceived size	–	–	.005 (.002)	.103*	.131 (.032)	.298***	.000 (.001)	.006	.000 (.001)	−.001
Intergroup contact	–	–	−.04 (.009)	−.329***	–	–	−.005 (.003)	−.11	−.014 (.006)	−.136*
Perceived threat	–	–	–	–	–	–	.209 (.029)	.55***	.542 (.046)	.633***
R^2	.153		.282		.239		.396		.492	

+ $p = .05$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

7. Conclusions and discussion

In this study, we set out to improve previous research regarding the role of outgroup size to explain anti-outgroup attitudes. We subjected several, contradictory hypotheses derived from group threat theory and intergroup contact theory to a simultaneous empirical test. This research produced the following major findings. First, with regard to group threat theory, we found that outgroup size (as measured by the objective percentage of immigrants on the municipality level) corresponded with the perceived size of immigrant groups in the respondents' neighborhoods, which in turn proved to be positively associated with perceived group threat. Subsequently, we found perceived group threat to relate positively to both anti-immigrant discriminatory intentions and disapproval of immigrants. These findings clearly support group threat theory. Second, with regard to intergroup contact theory, we found that a higher percentage of immigrants on the municipality level increased intergroup contact. In turn, intergroup contact proved to relate negatively to anti-immigrant discriminatory intentions and disapproval of immigrants, mainly by reducing perceptions of group threat. The data also showed a further negative direct relationship from intergroup contact to disapproval of the presence of immigrants. It seems reasonable to take this additional association as pointing to further mediating processes unobserved in the current study (Pettigrew and Tropp, 2008). Interestingly, our results also showed that individuals with higher levels of education reported more intergroup contacts. This result provides a first clue as to the embeddedness of intergroup contact experiences of ingroup members. Subsequent studies might examine whether this positive relationship of education with intergroup contact is consistent with the finding that the higher educated commonly hold more tolerant worldviews and values (Vogt, 1997), and thus are less reluctant to engage in intergroup contacts. Considering these major findings based on tests of hypotheses derived from group threat- and intergroup contact theory, we conclude that, at least in the Dutch context, outgroup size operates in a dual way: objective outgroup size parallels perceived outgroup size, which relates positively to anti-outgroup attitudes via perceived group threat. Likewise, both objective outgroup size and perceived outgroup size are positively associated with intergroup contact which, conversely, lowers anti-immigrant attitudes by a negative association with perceived group threat. We believe these results to deliver new and potentially important insights, but acknowledge the following limitations of the present study. First, we stress that our analyses are based on non-experimental survey data from a single time point only. This means that, although several of the empirical relations observed in the present study are consistent with our theoretical expectations, all of our findings are correlational. Accordingly, the question of the causal sequence for the individual constructs under study is still open to debate. Specifically, while the direction of causality from objective outgroup size to intergroup contact and perceived outgroup size might be rather obvious, there are reasonable theoretical arguments to expect alternative (e.g., reverse- or reciprocal) causal relations between between the individual-level constructs. For example, consistent with previous theory and research and backed up by the results from an explicit test of two competing measurement models, we conceptualized perceived group threat as direct predictor of two measures of discriminatory attitudes towards immigrants. Still, an important question is whether, e.g., reverse relations between discriminatory attitudes and perceptions of threatened group interests exist (Schlueter et al., 2008). There are reasonable arguments to contend that pre-existing discriminatory attitudes might also affect threatened group interests. Such an alternative hypothesis would be consistent with cognitive dissonance theory (Festinger, 1957; Harmon-Jones and Mills, 1999). Following this literature, pre-existing negative stances toward outgroups might increase perceptions of group threat because of people's motivation to avoid inconsistent information. However, to date the weight of empirical evidence seems to be in favour of a unidirectional relationship of per-

ceived threat with hostile attitudes towards outgroups (Riek et al., 2006). For example, Schlueter et al. (2008) use multiwave panel surveys from Germany and Russia to examine potential reverse- and reciprocal relations between perceived threat and different measures of hostile attitudes towards immigrants. Their results show that perceived threats lead to anti-immigrant attitudes and not vice versa. Nevertheless, future work is needed to specify and evaluate similar competing claims regarding the micro-social processes underlying intergroup relations. Cross-lagged analyses based on multiwave panel data could be used for simultaneous tests of such hypotheses. Second, we are well aware that the generalizability of our results might be limited by a 'natural' ceiling effect present in the data (the maximum immigrant group size per municipality was 30%). However, in other contextual units, the immigrant group size might well exceed this rate. Moreover, if demographic forecasting holds true, the proportion of the immigrant population in the Netherlands is likely to continue to rise in the future.[14] Hence, we consider it a primary task for subsequent research to re-examine the role of outgroup size from the perspectives of group threat theory and contact theory in alternative spatio-temporal settings. Ideally, these settings should provide a greater range of outgroup size than this research. Despite these issues, our findings yield promising avenues for further research. For instance, we utilized measures that we consider to be appropriate and valid attitudinal measures from the survey in question. Yet, these measures did not enable us to differentiate the threat perceptions and anti-immigrant sentiments of the respondents with regard to specific immigrant groups. Likewise, we also could not examine whether the intergroup contact patterns of the respondents varied with regard to members of different immigrant groups (Dixon, 2006) nor could we investigate the role of contentious contact experiences, which have been hypothesized to increase anti-outgroup sentiments (Stephan and Stephan, 1985). We believe that more differentiated analyses in this vein will provide further insights into the favorable and unfavorable reactions towards immigrants of members of host societies in general. Such research requires, however, more comprehensive survey data than available for this study. Future research might also benefit from using multilevel structural equation modeling based on a decomposition of the total population covariance matrix into a between-group and a pooled within-group covariance matrix (Kaplan and Elliott, 1997; Muthén, 1994; Muthén and Satorra, 1995). While this approach represents a very flexible analytical tool, a common rule of thumb tells us that multilevel SEM requires model-based design effects for observed indicators with a size $\geqslant 2$. In the present data, the model-based design effects for several indicators were slightly below this value. We suspect this finding was affected by the rather small average cluster size in concert with intra-class correlations attenuated due to measurement error. In fact, our efforts to apply this more advanced version of multilevel SEM resulted in non-admissible solutions only. We therefore opted for using SEM for clustered survey data with robust standard errors to prevent an increased risk of conducting type-I errors (Muthén and Satorra, 1995). A further point relates to the potential impact of a variable unobserved in this study: outgroup residential segregation. On the one hand, outgroup residential segregation has been considered to decrease the visibility and salience of outgroups, whereby unfavorable attitudes towards outgroups might be reduced (Taylor, 1998). On the other hand, outgroup residential segregation has also been assumed to minimize opportunities for intergroup contact – with anti-outgroup attitudes as a consequence (Allport, 1954). Thus, a logical next step is to put these contrasting propositions to a systematic empirical test. Finally, we consider the theoretical question whether one can specify conditions under which one of the two pathways through which outgroup size operates, might be dominant? Following previous studies (Blumer, 1958, p. 6; Oliver and Mendelberg, 2000; Oliver and Wong, 2003, p. 579f.; Wagner et al., 2006, p. 387), we suggest that, for social contexts smaller than those used in the present study, the primary impact of minority group size will be an enhancement of opportunities for intergroup contact, with reduced threat perceptions and improved attitudes towards the outgroup as a result. In contrast, for relatively large contexts such as exemplified by nation-states or variations within such macro-contexts over time, we consider outgroup size to be likely to be associated with an enhancement of threat perceptions and anti-outgroup attitudes (Coenders et al., 2004, 2005b). The reason for this is that, for relatively large contexts, outgroup size often becomes a topic for unfavorable political propaganda targeted against outgroups (Blumer, 1958, see Wagner et al., 2006). From this perspective, it is not the objective outgroup size per se, but the unfavorable political propaganda transmitting information about outgroups through the mass media that appears to be the underlying source of perceived threats and unfavorable intergroup attitudes. The current challenge is to augment these theoretical arguments and put them to systematic empirical test.

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[14] In fact, according to official statistics from the Social and Cultural Planning Office (SCP) the average percentage of non-western minorities in the Netherlands increased between the time the survey was conducted (2000) and the time the latest figures became available (2005).

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